CLAIMS

1. A hydraulic drive vehicle, comprising:

a hydraulic transmission;

an electronic actuator for changing an output/input rotation speed ratio of the hydraulic transmission; and

a controller of the actuator memorizing a command current value for the actuator supposing that load is not applied on the hydraulic transmission, and calculating a value of load applied on the hydraulic transmission by calculating a difference between an actual command current value for the actuator and the memorized command current value.

2. A hydraulic drive vehicle according to claim 1, further comprising:

a differential mechanism which combines rotation powers of input side and output side of the hydraulic transmission.

3. A hydraulic drive vehicle according to claim 1 or 2, wherein a command current value is compensated based on the value of load applied on the hydraulic transmission, and the actuator is controlled by feedback control method.

4. A hydraulic drive vehicle according to one of claims 1 to 3, further comprising:

a PTO shaft, wherein a value of load applied on the PTO shaft is calculated based on load applied on the hydraulic transmission and load applied on an engine.

5. A hydraulic drive vehicle, comprising:

speed change operation means;

a hydraulic transmission having a swash plate;

an actuator, wherein a slant angle of the swash plate is changed via the actuator corresponding to operation of the speed change operation means so as to change an

output/input rotation speed ratio of the hydraulic transmission;

an axle;

a drive shaft interlocking with the axle; and

rotation speed detection means for detecting a rotation speed of the drive shaft interlocking with the axle, wherein a target rotation speed of the drive shaft is set to a value corresponding to the slant angle of the swash plate set by operation of the speed change operation means, and wherein, if a rotation speed of the drive shaft detected by the rotation speed detection means differs from the target rotation speed, the slant angle of the swash plate is compensatively controlled via the actuator.

6. A hydraulic drive vehicle according to claim 5, wherein a compensational degree of the swash plate slant angle is detected as load applied on the hydraulic transmission.

7. A hydraulic drive vehicle according to claim 5, wherein a compensational operation degree of the actuator is detected as load applied on the hydraulic transmission.

8. A hydraulic drive vehicle according to claim 5, further comprising:

a PTO shaft, wherein a value of load applied on the PTO shaft is calculated based on load applied on the hydraulic transmission and load applied on an engine.

9. A hydraulic drive vehicle according to one of claims 5 to 8, further comprising:

a differential mechanism which combines rotation powers of input side and output side of the hydraulic transmission, wherein an output shaft of the differential mechanism serves as the drive shaft whose rotation speed is detected by the rotation speed detection means.

10. A hydraulic drive vehicle, comprising:

speed change operation means;

a hydraulic transmission having a swash plate;

an actuator, wherein a slant angle of the swash plate is changed via the actuator corresponding to operation of the speed change operation means so as to change an output/input rotation speed ratio of the hydraulic transmission; and

a differential mechanism which combines powers of input side and output side of the hydraulic transmission, wherein a drive mode of the vehicle can be switched between a mode setting output of the hydraulic transmission without passing the differential mechanism as traveling drive power and a mode setting output of the differential mechanism as traveling drive power, and the actuator is controlled so as to reduce a change rate of the swash plate position at the time of switching the drive mode while moving the movable swash plate to a set target position of the swash plate.

11. A hydraulic drive vehicle, comprising:

a hydraulic transmission including a hydraulic pump and a hydraulic motor provided with respective movable swash plates; and

an electronic actuator for moving one of the movable swash plates of the hydraulic pump and the hydraulic motor so as to change an output/input rotation speed ratio of the hydraulic transmission, the electronic actuator being provided with a dead zone against command current, wherein, when the actuator is moved across the dead band, the command current is changed between upper and lower thresholds demarcating the dead band without a time lag.

12. A hydraulic drive vehicle, comprising:

an engine;

a brake pedal; and

a hydraulic transmission which is turned into neutral by depressing the brake pedal while the engine is idling.

13. A hydraulic drive vehicle according to claim 11, further comprising:

a switch disposed in the vicinity of the brake pedal so that the switch can be operated

simultaneously with the brake pedal, wherein the switch is provided to select whether the hydraulic transmission is turning into neutral or not when the brake pedal is depressed and the engine is idling.

14. A hydraulic drive vehicle, comprising:

an engine whose rotation speed is detected; and

a hydraulic transmission, wherein an output rotation of the hydraulic transmission is detected after the hydraulic transmission is operated for speed changing, wherein an output/input rotation speed ratio of the hydraulic transmission is changed in proportion to the rotation speed of the engine, and wherein the hydraulic transmission is provided with a dead band for preventing the output/input speed ratio of the hydraulic transmission from changing regardless of change of the rotation speed of the engine.

15. A hydraulic drive vehicle, comprising:

an engine;

an electronic governor of the engine;

an engine rotation speed detector;

a hydraulic transmission whose output/input rotation speed ratio can be changed by electronic control, and

a controller controlling the governor and the hydraulic transmission, and memorizing a map concerning torque and rotational speed of the engine for obtaining an optimal fuel consumption, wherein the controller compares engine torque detected by the governor and engine rotation speed detected by the engine rotation speed detector with torque and rotation speed on the map, and wherein, when the detected values differ from the values on the map, the controller controls one or both of the governor and the hydraulic transmission so as to cancel the difference.

16. A hydraulic drive vehicle, comprising:

an engine;

an electronic governor provided to the engine and calculating engine load;

an engine rotation speed detector detecting a rotation speed of the engine;

a hydraulic transmission whose output/input rotation speed ratio can be changed by electronic control, and

a controller controlling the output/input rotation speed ratio of the hydraulic transmission and memorizing a map of maximum engine torque corresponding to the detected engine rotation speed, wherein, when the engine load detected by the governor is higher than engine load equivalent to the maximum engine torque corresponding to the engine rotation speed detected by the engine rotation speed detector, the controller reduces the output/input rotation speed ratio of the hydraulic transmission, and when the former is lower than the later, the controller increases the output/input rotation speed ratio of the hydraulic transmission.

17. A transmission for a hydraulic drive vehicle, comprising:

a working machine vertically movably attached to the vehicle;

an engine;

an electronic governor of the engine;

an engine rotation speed detector;

a hydraulic transmission whose output/input rotation speed ratio can be changed by electronic control, and

a controller controlling the governor and the hydraulic transmission, wherein, when the vehicle starts turning and a command signal for pulling the working machine up is emitted, the controller controls the governor so as to reduce the engine rotation speed and increases the output/input rotation speed ratio of the hydraulic transmission so as to compensate for the decrease of vehicle speed accompanying with the decrease of the engine rotation speed, and when the vehicle stops turning and a command signal for pulling the working machine down is emitted, the controller controls the governor so as to return the engine rotation speed to the set rotation speed and decreases the output/input rotation speed ratio of the hydraulic transmission so as to restrict the increase of vehicle

speed accompanying with the increase of the engine rotation speed.